US007193350B1

(12) **United States Patent**
Blackburn et al.

(10) **Patent No.: US 7,193,350 B1**
(45) **Date of Patent: Mar. 20, 2007**

(54) **ELECTROACTIVE POLYMER STRUCTURE**

(75) Inventors: **Michael R. Blackburn**, Encinitas, CA (US); **Selahattin Ozcelik**, Corpus Christi, TX (US)

(73) Assignee: **United States of America as Represented by the Secretary of the Navy**, Washington, DC (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 198 days.

(21) Appl. No.: **11/066,377**

(22) Filed: **Feb. 25, 2005**

(51) **Int. Cl.**
H01L 41/08 (2006.01)

(52) **U.S. Cl.** **310/311**; 310/328

(58) **Field of Classification Search** ..... None
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2003/0212356 A1* 11/2003 Scorvo 602/20
2005/0245853 A1* 11/2005 Scorvo 602/16

FOREIGN PATENT DOCUMENTS

CA 2466711 * 4/2003
CA 2466496 * 12/2003

* cited by examiner

Primary Examiner—Thomas M. Dougherty
(74) *Attorney, Agent, or Firm*—Allan Y. Lee; Michael A. Kagan; Peter A. Lipovsky

(57) **ABSTRACT**

An electroactive polymer (EAP) structure. The structure includes at least one EAP strand. An EAP strand includes a plurality of EAP segments and a plurality of insulators. An EAP segment includes an EAP tile and an activator. The activator facilitates activation of the EAP tile. The plurality of EAP segments and the plurality of insulators have a concatenated configuration, wherein adjacent EAP segments are electrically separated by one of the plurality of insulators, and wherein the EAP segments are operatively coupled to the plurality of insulators. A method for the system is also described.

13 Claims, 7 Drawing Sheets